

What is claimed is:

1 1. A method of processing video data comprising the
2 steps of:

3 encoding video data representing a series of
4 images using motion compensated prediction on at least
5 some of the images being encoded, the step of encoding
6 the video data including the step of generating motion
7 vectors for first and second image areas, the step of
8 generating motion vectors for the first image area
9 including the step of:

10 limiting the generation of motion vectors for
11 first image areas so that coded pixels in the first image
12 areas are limited to be a function of coded pixels of
13 corresponding first image areas of preceding or
14 subsequent images.

1 2. The method of claim 1, wherein the step of
2 generating motion vectors for the second image area
3 includes the step of:

4 limiting the generation of motion vectors for
5 second image areas so that coded pixels in the second
6 image areas are limited to be a function of coded pixels
7 of corresponding second image areas of preceding or
8 subsequent images; and

9 wherein the second image area is an image
10 subwindow located within an image.

1 3. The method of claim 1, further comprising the steps
2 of:

3 transmitting encoded data representing the
4 encoded images to a transmitting station,

5 removing from encoded data received by the
6 transmitting station encoded data corresponding to the
7 second image area to generate a set of encoded main
8 picture data; and

9 combining the encoded main picture data with
10 additional encoded data including at least some data
11 content provided at the transmitting station.

1 4. The method of claim 2, further comprising the steps
2 of:

3 transmitting encoded data representing the
4 encoded images to a transmitting station,

5 removing from encoded data received by the
6 transmitting station encoded data corresponding to the
7 second image area to generate a set of encoded main
8 picture data; and

9 combining the encoded main picture data with
10 additional encoded data including at least some data
11 content provided at the transmitting station.

1 5. The method of claim 4, further comprising the steps
2 of:

3 decoding at least some of the removed encoded
4 data;

5 combining the decoded data with at least some
6 additional data; and

7 encoding the combined decoded data and
8 additional data to generate said encoded data including
9 at least some data content provided at the transmitting
10 station.

1 6. The method of claim 5, further comprising the steps
2 of:

3 transmitting the combined encoded main picture
4 data and additional encoded data to a video decoder;
5 decoding the combined encoded main picture data
6 and additional encoded data; and
7 displaying the decoded data.

1 7. The method of claim 2, further comprising the steps
2 of:

3 transmitting data representing the encoded
4 images to a transmitting station,
5 decoding the encoded video data corresponding
6 to the second image portion of at least one encoded video
7 image;
8 processing the decoded image data to combine it
9 with additional image data;
10 encoding the image data resulting from the
11 combination of the decoded image data and the additional
12 image data to generate encoded insert image data;
13 transmitting encoded image data corresponding
14 to the first segment of the images received by the
15 transmitting station and the encoded insert image data to
16 the video decoder, and

17 decoding and displaying the encoded image data
18 transmitted to a video decoder.

1 8. The method of claim 2, wherein the step of encoding
2 video data representing a series of images using motion
3 compensated prediction techniques further comprises the
4 step of:

5 generating information identifying the portions
6 of the images upon which motion compensated prediction
7 was separately applied.

1 9. The method of claim 8, wherein the second segment is
2 an image subwindow into which data can be inserted by a
3 local broadcaster, the method further comprising the step
4 of:

5 transmitting to the local broadcaster the
6 generated information identifying the image subwindow
7 into which data can be inserted.

1 10. A method of encoding a second image as a function of
2 a first image, the first and second images each including
3 a first and second non-overlapping image segments, the
4 method comprising the step of:

5 using as reference data from the first image,
6 only image data corresponding to the first image segment
7 of the first image, when generating motion vectors to
8 represent a portion of the first image segment of the
9 second image; and

10 using as reference data from the first image,
11 image data corresponding to the second image segment of

12 the first image, when generating motion vectors to
13 represent a portion of the second image segment of the
14 second image.

1 11. The method of claim 10, wherein the method further
2 involves encoding the second image as a function of a
3 third image in addition to the first image, the method
4 further comprising the steps of:

5 using as reference data from the third image,
6 only image data corresponding to a first image segment of
7 the third image, when generating motion vectors to
8 represent a portion of the first image segment of the
9 second image.

1 12. The method of claim 11, further comprising the step
2 of:

3 using as reference data from the third image,
4 image data corresponding to the second image segment of
5 the first image, when generating motion vectors to
6 represent a portion of the second image segment of the
7 second image.

1 13. The method of claim 12, wherein the first image
2 precedes the second image in a video sequence and the
3 third image follows the second image in a video sequence,
4 the method further comprising the step of:

5 limiting the use of image data, for reference
6 purposes when generating motion vectors to represent the
7 second image segment of the second image, included in the
8 first and third images solely to use of the second image

9 segment when encoding the second image segment of the
10 second image.

1 14. The method of claim 10, wherein each of the first
2 and second images further includes a third image region,
3 the third image region being distinct from the first and
4 second image regions and corresponding to the same
5 portion of each of the first and second images, the
6 method further comprising the step of:

7 using as reference data from the first image,
8 only image data corresponding to the third image segment
9 of the first image, when generating motion vectors to
10 represent a portion of the third image segment of the
11 second image.

1 15. The method of claim 10, further comprising the step
2 of:

3 inserting into the encoded data representing
4 the second image, at least one bit identifying the
5 position of the encoded data representing the second
6 image segment within the encoded data representing the
7 second image.

1 16. The method of claim 10, wherein the first and second
2 image regions are encoded using independent non-
3 overlapping sets of reference data for motion compensated
4 prediction purposes, the method comprising the steps of:

5 inserting into the encoded data, information
6 identifying each of the image segments which is

7 independently encoded using motion compensated prediction
8 techniques.

1 17. A video encoder, comprising:

2 a motion compensated prediction encoding
3 circuit for generating motion vectors to represent
4 segments of a second image as a function of a first
5 image; and

6 a motion vector control module for controlling
7 the motion compensated prediction module to encode an
8 image as a plurality of distinct non-overlapping image
9 segments at least one segment of which is encoded using
10 only a corresponding image segment of the first image as
11 reference data when generating motion vectors to
12 represent the segment of the second image.

1 18. The video encoder of claim 17, further comprising:

2 means for including information identifying
3 encoded data corresponding to at least one of the
4 distinct non-overlapping image segments in the encoded
5 data.

1 19. A video encoder, comprising:

2 memory for storing information used to identify
3 a plurality of distinct non-overlapping image segments
4 which comprise an image; and

5 an encoder which performs motion compensated
6 encoding on a least one segment of an image being encoded
7 using reference image data obtained only from the

8 corresponding image segment of one or more additional
9 images.

1 20. The video encoder of claim 19, further comprising:
2 a circuit for including information within a
3 set of generated encoded data identifying encoded data
4 corresponding to said at least one segment.

1 21. A system for inserting data into an encoded
2 bitstream, comprising:
3 a parser for extracting data corresponding to
4 an image segment to be replaced and for generating a set
5 of encoded main image data which does not include the
6 extracted encoded image segment data; and
7 an encoded image data combining circuit for
8 combining the encoded main image data with insert encoded
9 image segment data to generate a modified set of encoded
10 image data.

1 22. The system of claim 21, further comprising:
2 a decoder coupled to the parser for receiving
3 and decoding the extracted image data;
4 an unencoded data combining circuit coupled to
5 the decoder for receiving decoded image data obtained
6 from the decoder with unencoded local image data to
7 generate a set of unencoded image data representing the
8 image segment to be replaced; and
9 an encoder, coupled to the unencoded data
10 combining circuit for encoding the set of unencoded image
11 data representing the image segment to be replaced to

12 thereby generate the set of insert encoded image segment
13 data.